# GROUND TESTERS

For all of your Ground Testing needs...

## An array of Ground Testers to choose from

Whether you are doing a simplified 2-Point, a more complete 3- or 4-Point Fall-of-Potential test, a soil resistivity test or a touch potential test, AEMC® has the right instrument for you. Our revolutionary Clamp-On Ground Resistance Tester will save you both time and money.

Whichever AEMC® ground tester you choose, you can count on it to be the highest quality, the most complete package and the simplest to learn to use.

*Our products are backed by over 100 years of experience in test and measurement equipment, and encompass the latest international standards for quality and safety.*

**Technical Hotline: (800) 343-1391**

**www.aemc.com**

AEMC® INSTRUMENTS

CHAUVIN ARNOUX GROUP

# Understanding Ground Resistance Testing

The term ***ground*** is defined as a conducting connection by which a circuit or equipment is connected to the earth. The connection is used to establish and maintain, as closely as possible, the potential of the earth on the circuit or equipment connected to it. A ***ground*** consists of a grounding conductor, a bonding connector, its grounding electrode(s) and the soil in contact with the electrode.

***Model 4630 performing a 3-Point ground resistance test on an individual rod.***

## To measure:

- Soil Resistivity — use a 4-Point tester
- Touch Potential — use a 4-Point tester
- Low Ground Resistance (5Ω or less) Grids or Mats — use a dual 3- / 4-Point tester
- Individual Ground Rods — use a 3-Point tester
- Ground Resistance testing without the need for auxiliary electrodes or disconnecting neutrals — use a clamp-on tester or instrument using clamp-on features
- Bonding Resistance — use a Micro-Ohmmeter

***Model 6250 conducting bond verification on a grounding system.***

## Grounding electrode systems have several protection applications:

**For natural phenomena,** such as lightning, grounds are used to discharge current from the system to protect people from possible injury or system components from possible damage.

**For faults in electric power systems** with ground returns, grounds help ensure rapid operation of the protection relays by providing low resistance fault current paths. This provides for the removal of the foreign potential as quickly as possible. The ground should drain the foreign potential before people are injured and the power or communications system is damaged.

**For maintaining a reference potential** for instrument safety, protect against static electricity, and limit the system to frame voltage for operator safety, a ground resistance should be zero ohms. In reality, this value is difficult to obtain.

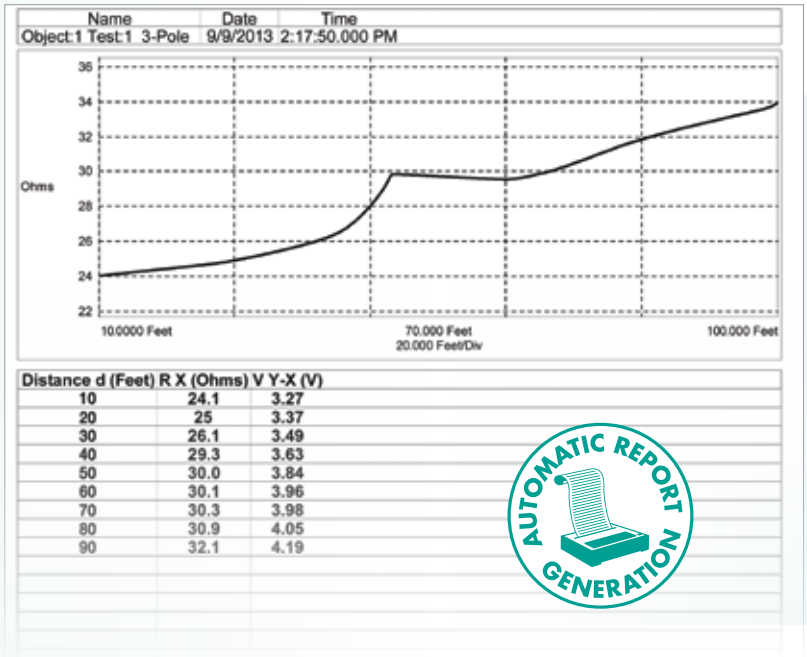
Lastly, **for low ground resistance,** it is essential to meet NEC®, OSHA and other electrical safety standards.

## APPLICATIONS

- Measure ground rod and grid resistance
- Use in multi-grounded systems without disconnecting the ground under test
- Measure resistance and continuity of grounding loops around transformer pads and buildings
- Measure leakage current flowing to ground or circulating in ground loops
- Conduct quick field checks
- Conduct field surveys and retrieve and analyze readings from stored data
- Measure earth resistance of the type of single rod or small ground grids often found in remote telecommunication switching stations
- Measure ground electrode resistance on lightning protection equipment
- Measure the earth electrode resistance of equipment in recreational areas, especially public swimming pools
- Test electrode resistance of installed ground rods and grids at new construction sites before utility power is supplied
- Test earth electrode resistance of grounded towers and counterpoises at cellular phone remote installations and power transmission towers
- Three-Point measurement of large grounding grids, counterpoises, ground mats, and grounded equipment
- Locate areas of lowest soil resistivity which is essential for achieving an economical grounding installation

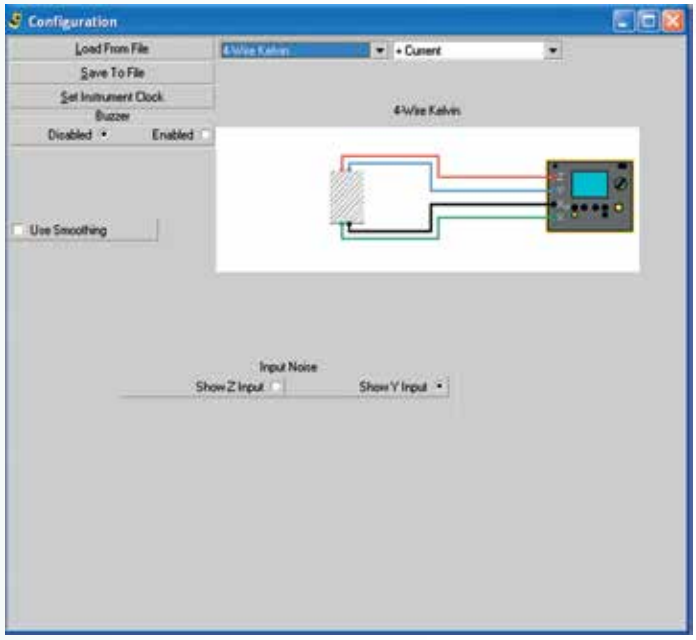
# DataView®

## Data Analysis and Reporting Software for Ground Testers

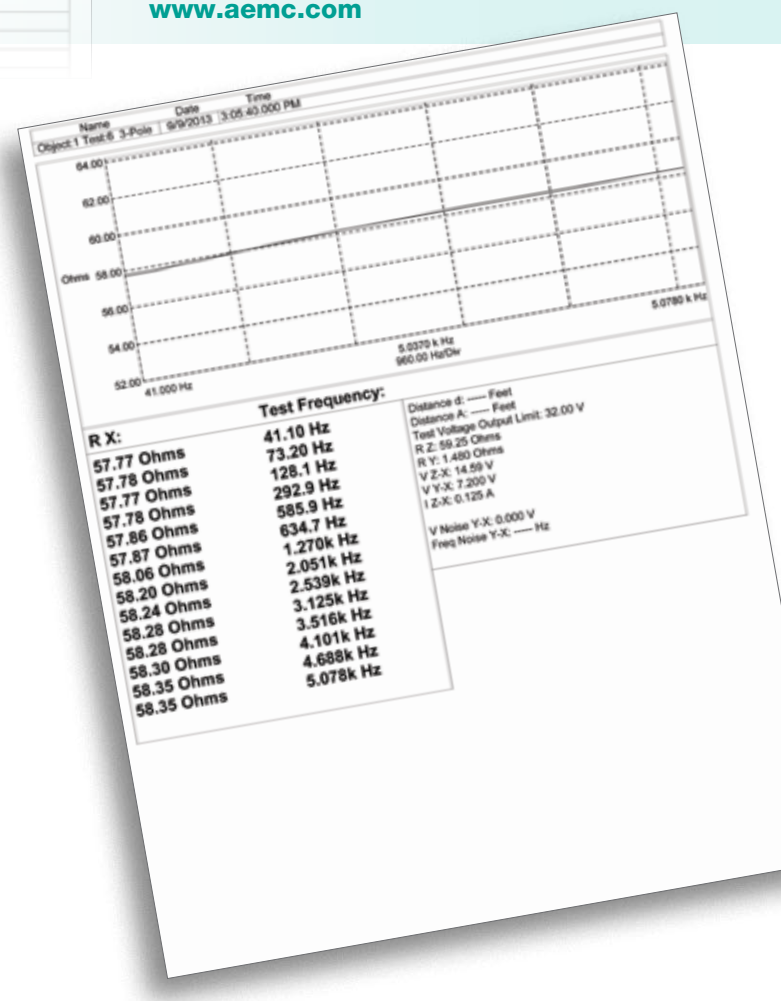



## Configure all functions of the Models 6417, 6471 & 6472

- Run tests and analyze real-time data from your PC
- Configure all test functions and parameters from your PC
- Customize views, templates and reports to your exact needs
- Display Fall-of-Potential plots, tabular listings of test results, resistance vs. frequency plots, soil resistivity and bonding tests
- Print reports using standard or custom templates you design
- Free updates are available on our website **www.aemc.com**




*DataView® software provides a convenient way to configure and control ground resistance tests from your computer. Through the use of clear and easy-to-use tabbed dialog boxes, all ground tester functions can be configured and tests can be initiated. Results can be displayed in real-time and stored in your PC. Reports may be printed along with the operator's comments and analysis.*



# GROUND TESTER SELECTION GUIDE

## Clamp-On Ground Resistance Testers

*The Clamp-On Ground Resistance Testers measure ground rod and grid resistance without the use of auxiliary ground rods. They offer accurate readings from 0.01 to 1500Ω, as well as ground leakage current from 0.2mA to 40A, without disconnecting the ground system under test.*

## 3-Point Ground Resistance Testers

*The 3-Point Ground Resistance Testers are available in both analog and digital models. These Fall-of-Potential testers are designed to reject high levels of noise and interference and offer measurement ranges up to 1999Ω. All models are available in complete kit form which includes leads, auxiliary electrodes, 100 ft tape measure, carrying bag and cable.*

## 4-Point Ground Resistance Testers

*The 4-Point Ground Resistance Testers are ideal for both soil resistivity and Fall-of-Potential testing. Models are available as battery powered or with AC power cord. All models are available in complete kit form which includes leads, auxiliary electrodes, 100 ft tape measure, carrying bag and cable.*

## Bond Testers

*Micro-Ohmmeter Model 6240 and 6250 perform reliable low resistance measurements with test current to 10A and resolution to 1μΩ. Model 6250 uses a four-wire Kelvin Bridge method, which eliminates test lead resistance for best measurement accuracy.*

# Now you can test energized

# GroundFlex® Field Kit

## Tower Ground Resistance Testing

***Test active towers safely without disconnecting any cables***

cover closed

The **Model 6472** with companion **Model 6474 GroundFlex® Adapter** unit comprise a powerful high end ground resistance testing system.

***Flexible sensors measure leakage current and resistance on tower legs***

This new and innovative system provides a cost effective method of accurately measuring the grounding resistance of power transmission, cellular and other towers without disconnecting or isolating the tower from other structures. This feature alone will save enough time and money to pay for itself in just a few months. Any monopole up to four legged tower can be tested, measuring the resistance of each leg, total resistance to ground and leakage current on each leg. Flexible sensors wrapped around each leg of the tower provide an accurate high sensitivity measurement capable of determining these values that other measuring techniques can not. This system can also measure all traditional ground testing measurements including three pole fall-of-potential, four pole soil resistivity, bonding and earth coupling. Tests can be conducted at selected frequencies from 41 to 5078Hz or swept across the full frequency range, ideal for profiling impedance needed to analyze the effects of a lightning strike.

The system includes all necessary sensors, wires and reels, auxiliary electrodes and cables needed to conduct all tests.

Up to 512 complete measurements can be stored in internal memory for later downloading to a PC for analysis and reporting using the full featured DataView® software package included FREE.

Each instrument in the system is packaged in a rugged water resistant polycarbonate case and the full kit is additionally packaged in a field travel case which serves as a field work station. The system can be operated off batteries, AC power or 12 volt DC.

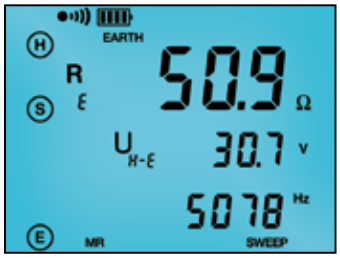
# Model 6472 comes with a large display!

| MODEL | 6472 |
|---|---|
| 3-Point Measurement | ✓ |
| 4-Point Measurement | Direct soil resistivity measurement |
| Bond Test (2- and 4-wire) | ✓ |
| 2 Clamp Measurement | ✓ |
| Soil Resistivity 4-Pole Measurement | ✓ |
| Earth Potential Measurement | ✓ |
| External Voltage Measurement | 0.1 to 65.0V |
| External Current Measurement | 0.01 to 40.0A |
| Measurement Range | 99,000Ω |
| Ranging | Auto-Ranging |
| Test Current | Up to 250mA |
| Test Frequency | Selectable from 40 to 5078Hz |
| Power Source | 9.6V rechargeable battery pack |
| Display | Digital/backlight |
| Dimensions | 10.7 x 9.76 x 5.12" |
| Weight | 7.5 lbs |
| Catalog No. | 2135.54 |

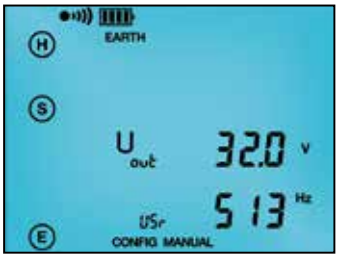
| MODEL | 6474 |
|---|---|
| Tower Measurement with GroundFlex® | 0.001 to 99.99kΩ |
| Current Measurement with GroundFlex® | 0.1mA to 99.9A |
| Catalog No. | 2136.03 |

**2-Point Bond Test**

**3-Point Ground Resistance**




**Frequency Selection**




**Data Storage**

**Schlumberger Test**

**Wenner Test**

**Ground Tester Model 6472 Kit-500 ft**

*Includes meter, rechargeable NiMH batteries, optical USB cable, power adapter 110/240V with power cord 115V US, two 500 ft color-coded leads on spools (red/blue), two 100 ft color-coded leads (hand-tied, green/black), one 30 ft lead (green), four T-shaped auxiliary ground electrodes, one 100 ft AEMC® tape measure, DataView® software with ground tester workbook on USB, carrying bag for meter and carrying bag for kit.* ***Catalog #2135.54***

**GroundFlex® Adapter Model 6474 & 5m GroundFlex®**

*Includes GroundFlex® Adapter Model 6474, four GroundFlex® sensors (5m) with twelve color-coded rings, connection lead, two extension leads on H reel (black/green) with color-coded alligator clips, one extra black and green alligator clip, six BNC extension leads, calibration loop, three C-clamps, carrying case with wheels and handle for meters, one inverter 12VDC to 120VAC 200 watt (vehicle use) and user manual.* ***Catalog #2136.03***

## Analog Ground Resistance Tester
## Model 3620

| | |
|---|---|
| **2-Point Test** | ✓ |
| **3-Point Test** | ✓ |
| **4-Point Test** | — |
| **Measurement Range** | 0.5 to 1000Ω |
| **Ranging** | Automatic |
| **Test Current** | Auto up to 10mA |
| **Noise Protection** | Enhanced filtering with LED indication |
| **Power Source** | Eight 1.5V AA Alkaline batteries |
| **Display** | Analog |
| **Dimensions** | 8.7 x 5.4 x 5.9" |
| **Weight** | 2.9 lbs |
| **Catalog No.** | **2114.90** |

***Also available as complete Test Kits***

## Digital Ground Resistance Tester
## Model 3640

| | |
|---|---|
| **2-Point Test** | ✓ |
| **3-Point Test** | ✓ |
| **4-Point Test** | — |
| **Measurement Range** | 0.00 to 1999Ω |
| **Ranging** | Automatic |
| **Test Current** | Auto up to 10mA |
| **Noise Protection** | Enhanced filtering with LED indication |
| **Power Source** | Eight 1.5V AA Alkaline batteries |
| **Display** | Digital |
| **Dimensions** | 8.7 x 5.4 x 5.9" |
| **Weight** | 2.9 lbs |
| **Catalog No.** | **2114.92** |

***Also available as complete Test Kits***

## Clamp-On Ground Resistance Tester
## Models 3711 & 3731

| **MODELS** | **3711** | **3731** |
|---|---|---|
| **Clamp-On Test** | ✓ | |
| **Measurement Range** | 0.1 to 1200Ω | |
| **Ranging** | Automatic | |
| **Current Ranging** | 1mA to 30Arms | |
| **Test Current** | Automatic | |
| **Noise Protection** | Enhanced filtering | |
| **Other Features** | Hold function | Alarm & memory |
| **Power Source** | 9V Alkaline | |
| **Display** | Digital | |
| **Dimensions** | 9.25 x 3.94 x 2.17" | |
| **Weight** | 2.2 lbs | |
| **Catalog No.** | **2117.60** | **2117.61** |

## Digital 10A Micro-Ohmmeter
## Model 6250

*cover closed*

| | |
|---|---|
| **4-Point, Kelvin Bridge** | ✓ |
| **Measurement Range** | 5μΩ to 2500.0Ω |
| **Test Current** | 1mA to 10A selectable |
| **Measurement Mode** | Inductive/Resistive/Auto |
| **Metal Alpha** | Adjustable to 99.9 |
| **Temperature Correction** | Manual or Auto |
| **Power Source** | Rechargeable 6V NiMH battery pack |
| **Display** | Digital/backlight |
| **Dimensions** | 10.7 x 9.76 x 7.17" |
| **Weight** | 8 lbs |
| **Catalog No.** | **2129.81** |

***Accessory 1A and 10A Kelvin Probes available***

## Digital 10A Micro-Ohmmeter
## Model 6240

*cover closed*

| | |
|---|---|
| **4-Point, Kelvin Bridge** | ✓ |
| **Measurement Range** | 5μΩ to 400Ω |
| **Test Current** | 10mA to 10A selectable |
| **Resolution** | 1μΩ to 100mΩ |
| **Temperature Correction** | Manual |
| **Power Source** | Rechargeable 6V NiMH battery pack |
| **Display** | Digital/backlight |
| **Dimensions** | 10.7 x 9.76 x 7.17" |
| **Weight** | 9.9 lbs |
| **Catalog No.** | **2129.80** |

***Accessory 1A and 10A Kelvin Probes available***

## Clamp-On Ground Resistance Tester Models 6416 & 6417

NEW!

| MODELS | 6416 | 6417 |
|---|---|---|
| Clamp-On Test | ✓ | |
| Measurement Range | 0.01 to 1500Ω | |
| Ranging | Automatic | |
| Current Ranging | 0.2mA to 40Arms | |
| Test Current | Automatic | |
| Selective Test Frequency | ✓ | ✓ |
| Voltage Detection | ✓ | ✓ |
| Data Storage | ✓ | ✓ |
| Report Generation | — | ✓ |
| Noise Protection | Enhanced filtering | |
| Other Features | Hold function | Alarm & memory |
| Power Source | 9V Alkaline | |
| Display | Digital | |
| Dimensions | 10.31 x 3.74 x 2.17" | |
| Weight | 2.06 lbs | |
| Catalog No. | 2141.01 | 2141.02 |

### Ground Resistance Tester Kit 150 ft

Test Kit for 3-Point testing includes meter, two 150 ft color-coded leads on spools (red and blue), one 30 ft lead (green), two 14.5" T-shaped auxiliary ground electrodes, one set of five spaded lugs, 100 ft tape measure and carrying bag. ***Catalog #2135.35***

| | |
|---|---|
| **Model 3620 Kit:** | Catalog #2135.10 |
| **Model 3640 Kit:** | Catalog #2135.13 |
| **Model 4620 Kit:** | Catalog #2135.19 |
| **Model 4630 Kit:** | Catalog #2135.22 |

## Ground Resistance Tester Model 6471

cover closed

| | |
|---|---|
| 2 Clamp Measurement | ✓ |
| 3-Point Test | ✓ |
| 4-Point Test Direct soil resistivity measurement | |
| Bond Test (2- and 4-wire) | ✓ |
| Earth Coupling Test | ✓ |
| External Voltage Measurement 0.1 to 65.0V | |
| Measurement Range | 99,000Ω |
| Ranging | Auto-Ranging |
| Test Current | Up to 250mA |
| Test Frequency | Selectable from 41 to 513Hz |
| Power Source | Rechargeable 9.6V NiMH battery pack |
| Display | Digital/backlight |
| Dimensions | 10.7 x 9.76 x 5.12" |
| Weight | 7.5 lbs |
| Catalog No. | 2135.49 |

***Also available as complete Test Kits***
***AC Current Probes Model SR182 included***

### Ground Resistance Tester Kit 300 ft

Test Kit for 4-Point testing includes meter, two 300 ft color-coded leads on spools (red and blue), two 100 ft color-coded leads (green and black), four 14.5" T-shaped auxiliary ground electrodes, one set of five spaded lugs, 100 ft tape measure and carrying bag. ***Catalog #2135.36***

| | |
|---|---|
| **Model 3620 Kit:** | Catalog #2135.11 |
| **Model 3640 Kit:** | Catalog #2135.14 |
| **Model 4620 Kit:** | Catalog #2135.20 |
| **Model 4630 Kit:** | Catalog #2135.23 |
| **Model 6471 Kit:** | Catalog #2135.50 |
| **Model 6472 Kit:** | Catalog #2135.53 |
| **Model 6471 Kit no probes:** | Catalog #2135.60 |

## Digital Ground Resistance Tester Models 4620 & 4630

cover closed

| MODELS | 4620 | 4630 |
|---|---|---|
| 2-Point Test | ✓ | |
| 3-Point Test | ✓ | |
| 4-Point Test | ✓ | |
| Measurement Range | 0.00 to 1999Ω | |
| Ranging | Automatic | |
| Test Current | Auto up to 10mA | |
| Noise Protection | Enhanced filtering with LED indication | |
| Power Source | Eight C cell Alkaline batteries | Rechargeable 9.6V NiMH battery pack |
| Display | Digital/backlight | |
| Dimensions | 10.7 x 9.76 x 5.12" | |
| Weight | 7.75 lbs | |
| Catalog No. | 2130.43 | 2130.44 |

***Also available as complete Test Kits***

### Ground Resistance Tester Kit 500 ft

Test Kit for 4-Point testing includes meter, two 500 ft color-coded leads on spools (red and blue), two 100 ft color-coded leads (green and black), one 30 ft lead (green), four 14.5" T-shaped auxiliary ground electrodes, one set of five spaded lugs, 100 ft tape measure and carrying bag. ***Catalog #2135.37***

| | |
|---|---|
| **Model 4620 Kit:** | Catalog #2135.21 |
| **Model 4630 Kit:** | Catalog #2135.24 |
| **Model 6472 Kit:** | Catalog #2135.54 |
| **Model 6471 Kit: no probes** | Catalog #2135.61 |

# www.aemc.com

*Since its creation in 1893, Chauvin Arnoux® has continued to innovate and develop new products in response to customer needs and applications. Over the years, Chauvin Arnoux® has developed extensive expertise and knowledge in many product lines, including: current probes, multimeters (they invented the first multimeter in 1937!), ground testers, insulation testers, environmental testers and many others in the portable test instrument realm.*

***One product line that stands out is Earth/Ground Testers.***

*The ground tester line finds its roots in the early 1930s. Limited technology was available, so a null balance galvanometer, a decade resistance box and a DC power source combined to make one of the first ground testers. Years later hand-cranked technology, first using a generator, provided the test voltage. Electronics set in the 1950s and 60s gave birth to electronic ground testers with electronic amplifiers. Eventually, digital displays came to the scene, though analog meters remained due to customer habits and taste. Over 20 years ago, AEMC® revolutionized the ground testing market by offering clamp-on ground testers. After several generations, the AEMC® clamp-on ground tester (Models 3711 and 3731) remains the industry standard.*

*Today, ground testers are digital and incorporate many intelligent features. Timers, alarms and variable test voltages are becoming common. AEMC® recently introduced a unique line of professional ground testers built into field cases. The Model 6472 is the latest product in this new line. These units simplify the measurement by automatically selecting the right test voltage, range and frequency. These new meters also indicate circuit noise and connection faults to ensure reliable measurements. Earth coupling along with 2- and 4-wire bond tests can also be performed. Data can be stored and downloaded to a PC for automatic report generation. All AEMC® manufactured ground testers are designed to the latest international safety and testing standards and are CE marked.*

*Our latest Multi-function Ground Tester Model 6472*

*First Ground Tester introduced 1935*

Visit our website at **www.aemc.com**

**AEMC ONE SOURCE®**
**For All Your Electrical Test & Measurement Instruments**

Call the AEMC® Instruments Technical Assistance Hotline for immediate consultation with an applications engineer: **(800) 343-1391**

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